AMNESIAC
Amnesic Automatic Computer

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Energy Efficiency

Conventional

Near-threshold Computing

2-4X
Power Consumption = Switching + Static
Near-threshold: Static power becomes dominant

Switching becomes cheaper than anything static-power-hungry
Power Consumption = Switching + Static
Near-threshold: Static power becomes dominant

(Re)computing becomes cheaper than memorization
amnesia | amˈnɛZHə |
noun
a partial or total loss of memory.

ORIGIN late 18th cent.: from Greek amnēsia ‘forgetfulness.’
Memorized?  Memorize?
amnesia | amˈnēZHə |
noun
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Power

Delay (Log)

Energy Efficiency

$V_{dd_{SubTV}}$  $V_{dd_{NTV}}$  $V_{dd_{STV}}$

Sub-Threshold Voltage  Near-Threshold Voltage  Super-Threshold Voltage

$V_{th}$  $\sim 0.5V$  $\sim 1V$

$10x-40x$

$5x-10x$

$2x-4x$

$V_{dd}$